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**FACT SHEET**  
**PART III, OPERATING UNIT 11, THE INTEGRATED DISPOSAL FACILITY**

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**FACT SHEET**  
**PART III, OPERATING UNIT 11, THE INTEGRATED DISPOSAL FACILITY**

**UNIT DESCRIPTION**

The Integrated Disposal Facility (IDF) is an expandable lined landfill in Hanford's 200 East Area. The IDF is on 25 hectares of vacant land southwest of the PUREX Plant in the 200 East Area.

The landfill is designed to hold four layers of waste containers separated vertically by 0.9-meters of soil.

The mission of the IDF will include:

- Providing a disposal facility for the permanent, environmentally safe disposition of vitrified low-activity waste (LAW) packages that meets the environmental requirements. Low-activity wastes are radioactive wastes that contain very small concentrations of radionuclides. It is the less radioactive remainder of high-level waste after treatment to remove the more radioactive isotopes (mostly cesium-137).
- Receiving vitrified LAW from the Waste Treatment Plant (WTP) and River Protection Project (RPP) tank operations Demonstration Bulk Vitrification System (DBVS) and dispose of this waste onsite.
- Disposing of mixed low-level waste generated by IDF operations.

IDF is divided lengthwise into two separate cells. The west cell, for disposal of mixed waste, is included in this permit. The east cell, for disposal of low-level radioactive waste, is outside the scope of this permit.

The Leachate Collection System (LCS) will segregate leachate collected from the individual cells. A high point down the center of the liner system will ensure the leachate from the permitted west cell does not contaminate the leachate from the east cell.

The Permittees will build the IDF in several phases. Today, the IDF is approximately 223 meters wide by 233 long by 14 meters deep. Its disposal capacity is 82,000 cubic meters of waste.

As the Permittees need more disposal space, they will request permit modifications to expand IDF. By expanding the landfill only as more space is needed, there is less open area susceptible to collection of rainwater and subsequent leachate.

IDF's final size would be up to 446 meters wide by 555 meters long by 14 meters deep. The permitted portion of the landfill would be half of that – approximately 223 meters wide by 555 meters long by up to 14 meters deep. The capacity of the permitted side of IDF is up to 450,000 cubic meters.

IDF has a secondary leak detection system (SLDS). The SLDS provides access to the area just below the Leak Detection System (LDS) sump area. The SLDS collects liquids from construction water and possibly other sources. The SLDS liners convey the liquids to the SLDS piping for monitoring and removal.

The RCRA-permitted cell of the IDF includes a 90-day accumulation area for collection of leachate in a large tank for the Leachate Collection and Removal System (LCRS) and the LDS, and a smaller portable container for the SLDS. The leachate collection tanks are at the north end, very near the lined landfill. The tanks are protected by secondary containment.

The monitoring of the secondary containment will detect any leaks for the tank. When IDF is fully operational, the permit requires the Permittees to collect and sample the leachate before transferring it to a treatment, storage, and disposal system. The Permittees must operate the leachate collection tank as required by the generator provisions of [WAC 173-303-200](#) and [WAC 173-303-640](#) as referenced by [WAC 173-303-200](#).

Before disposal, all waste must meet land disposal restriction requirements in:

- Revised Code of Washington (RCW) 70.105.050(2).
- [WAC 173-303-140](#).
- 40 Code of Federal Regulations (CFR) 268 (incorporated by reference in [WAC 173-303-140](#)).

Future landfill construction and design within IDF may change as disposal techniques improve or as waste management needs dictate.

## TYPE AND QUANTITY OF WASTE

To date, IDF has not received any dangerous waste. The facility is in a “pre-active life” status. [WAC 173-303-040](#) defines the “active life” of a facility as “the period from the initial receipt of dangerous waste at the facility until the department receives certification of final closure.” The IDF has not yet begun its official “active life.”

Ecology has defined the “pre-active life” period as the time between the end of construction and 180 days before the receipt of waste. When the IDF is ready to receive and dispose of permitted waste, IDF will begin its “active life.” It will take about 6 months to make the facility ready for waste. When the Permittees are ready to begin the facility’s active life and receive waste, they must submit a permit modification to Ecology.

## BASIS FOR PERMIT CONDITIONS

This permit is intended to protect human health and the environment while ensuring proper disposal of low-level radioactive waste and mixed waste at IDF. The scope of the unit-specific conditions is restricted to the landfill operation and maintenance as necessary to dispose:

- Immobilized low-activity waste from the WTP.
- Immobilized low-activity waste from the Demonstration Bulk Vitrification System.
- IDF operational waste as identified in Addendum B.

Future expansion of the dangerous and mixed waste cell, or disposal of wastes not specified in this permit is prohibited unless authorized through a modification of this Permit.

The permit conditions and addenda specifically address general waste management, waste analysis and waste acceptance, recordkeeping and reporting, security, preparedness and prevention, contingency plan, inspections, training plan, closure, post-closure, landfills and groundwater and groundwater monitoring.

## GENERAL WASTE MANAGEMENT REQUIREMENTS

IDF has not yet received waste, and none is expected for at least a few years. During the pre-active life phase, the Permittees will not put any dangerous or mixed waste (defined in [WAC 173-303](#)) in the IDF. The 180-day period is tied to IDF Conditions III.11.C.5 and III.11.C.6. These conditions require that before any wastes go to the IDF, the Permittees must submit all waste acceptance criteria to Ecology for approval and incorporation into the Permit.

Condition II.11.C.8 requires the Permittees to submit an ILAW Waste Form Technical Requirements Document before disposing of any vitrified waste in the IDF. The documents will help assure that each glass formulation will adequately protect human health and the environment once disposed in the IDF.

## Liquids Management

During the pre-active life of the IDF, rainwater is expected to accumulate in all sumps designed for the collection of leachate. Condition II.11.S.6 allows this liquid not to be designated as leachate until the Permittees dispose of waste in the IDF. During pre-active life, the Permittees will manage this water as

rainwater using the pollution prevention and best management practices required by State Waste Discharge Permit Number ST 4511.

At least six months before the Permittees dispose of any waste at the IDF, Condition III.11.S.5.b.i requires them to submit a Leachate Monitoring and Management Plan to Ecology for approval and incorporation into the permit. They must also submit a Sub-surface Liquids Monitoring and Operations Plan to Ecology (Condition III.11.S.5.d). This plan will include:

- Monitoring frequency.
- Pressure transducer configuration.
- Liquid collection processes.
- Sampling, analysis, and response actions for liquids in the Secondary Leak Detection System.

### **Groundwater Monitoring and Risk Budget Tool**

Ecology does not have enough information as to whether the IDF groundwater monitoring plan is adequate or complete. Normally, we would evaluate the Groundwater Monitoring Plan before issuing a final permit. Ecology would use the formal evaluation process to comment on the permit application and identify data gaps or deficiencies. The Permittees would correct any gaps or deficiencies. Then Ecology would start drafting permit conditions and requirements.

Ecology must issue the Hanford site-wide permit before the Permittees submit the needed information for the IDF. Therefore, we are establishing permit conditions to characterize groundwater flow direction. Ecology will use the results of this characterization to determine the down gradient Point of Compliance. The groundwater monitoring wells will be located as close as possible to the Point of Compliance. This initial characterization normally would take place during the IDF permit application development process. But Ecology did not recognize until recently that we lacked accurate flow direction information.

After this characterization, the Permittees will submit for approval a revised Groundwater Monitoring Plan meeting all of the requirements of [WAC 173-303-645](#). Addendum D, the Groundwater Monitoring Plan for IDF, is attached for informational purposes only. It is the April 9, 2006, version of Chapter 5 of the former IDF permit.

Condition III.11.W requires the Permittees to monitor the groundwater in accordance with the approved revised Addendum D. Condition III.11.C.6 requires the Permittees to create and maintain a modeling Risk Budget Tool. The tool will model the future impacts of the planned IDF waste forms and their impact to the underlying vadose zone and groundwater.

The Permittees must use the Risk Budget Tool in a manner consistent with state and federal requirements. The tool must represent a cumulative risk analysis of all waste already disposed in both the RCRA and non-RCRA cells of the IDF, and those wastes expected to be disposed in the future. If modeling indicates results within 75% of any performance standard, Ecology and the Permittees will meet to discuss mitigation measures.

## **UNIT-SPECIFIC REQUIREMENTS**

### **Soil Stabilization**

Soil erosion may occur at IDF while it is in “pre-active life” status. Condition III.11.S.7 requires the Permittees to apply soil stabilization materials in and around the landfill as needed to prevent soil erosion.

## **RECORDKEEPING AND REPORTING**

The Permittees will comply with recordkeeping and reporting requirements applicable to all IDF dangerous waste management units and waste management activities. Conditions for recordkeeping are based on [WAC 173-303-380](#). Condition III.11.D requires the Permittees to include the following information in the Hanford Facility Operating Record, IDF File:

1. A description of and quantity of each dangerous and mixed waste accepted for disposal by IDF and documentation of its disposal.
2. A three-dimensional location of and quantity of waste in each waste container or canister disposed of in IDF. The location of each waste container or canister may be recorded on a map or diagram of the mixed/low-level waste IDF cell, or recorded as geographical coordinates that can be used to relate to specific locations within an IDF cell.
3. The records and results of any sampling or analysis of wastes accepted for disposal at IDF, and from any other sampling and analysis required by Addendum B, Waste Analysis Plan.
4. A copy of the notice and the certification and demonstration if applicable, required by a generator or the owner or operator of a treatment facility from which waste is accepted for disposal at IDF.

## **SECURITY**

IDF is in Hanford's secured area. Access to the unit is subject to the general security provision of Condition II.L. IDF Addendum E describes security measures, equipment, and warning signs for the unit. These requirements satisfy the security requirements of [WAC 173-303-310](#).

## **PREPAREDNESS AND PREVENTION**

During the pre-active phase, no dangerous waste will go to the IDF. Therefore, it is reasonable to designate IDF as an "Administrative Facility" or non-hazardous facility as defined in the Hanford Emergency Management Plan (DOE/RL-94-02).

During the pre-active life phase, emergency management would be the same as for an administrative facility. Facility Emergency Response Information Boards provide information for use in an emergency. The Permittees will maintain the boards and keep them current.

In addition, the U.S. Department of Energy's *Emergency Plan Implementing Procedures*

"Recognizing and Classifying Emergencies" (DOE-0223), establishes the emergency response actions for non-hazardous facilities. The building warden assigned by the Permittees manages and controls the initial response in an emergency.

The Permittees will comply with IDF Addendum E (Security), Addendum F (Preparedness and Prevention), and Addendum J (Contingency Plan and Emergency Response).

## **CONTINGENCY PLAN**

The Permittees will comply with Addendum J in addition to the requirements of the Condition II.A when applicable.

## **INSPECTIONS**

Condition III.11.H and IDF Addendum I reduce required inspections from those of an operating facility. They are designed to ensure the IDF retains its integrity as a waste disposal site. The Permittees have developed a procedure specifically for the pre-active life phase to guide IDF personnel on inspection requirements.

## **TRAINING**

During the pre-active life phase, no dangerous waste will go to the IDF, and workers will not need as much training. Requirements for training during the IDF's custodial care phase will be limited to HGET and IDF unit-specific orientation. Condition III.11.I requires the Permittees to include the training requirements of Addendum G of Unit 11 into a written training plan as required by Condition II.C.

The Permittees will comply with [WAC 173-303-330](#) requirements for a training plan and training records.

If the Permittees bring materials or chemicals into the IDF for maintenance, properly trained personnel will handle any spills or releases. The Permittees will follow Tank Farm Contractor and Analytical Technical Services documents for guidance. These documents are TFC-OPS-OPER-D-01, "Event Notification," and TFC-ESHQ-ENV-FS-C-01, "Environmental Notifications."

## **CLOSURE**

Ecology found during the application review that the application did not meet one of the minimum technical requirements of [WAC 173-303-806\(4\)\(h\)\(v\)](#). That requirement is for submittal of appropriate, detailed plans and engineering report for the final closure cap. The Permittees provided a generic description of what the closure cap may look like in Addendum H. Ecology commented on this deficiency during the application process. The Permittees explained that it would be better to design the cover closer to the time of cover placement, to use improved knowledge of disposed waste, its hazard, and the most current requirements of [WAC 173-303-806](#).

To support the IDF construction schedule, Ecology agreed to this approach based on [WAC 173-303-806\(4\)\(a\)](#): "...If owners and operators of TSD facilities can demonstrate that the information prescribed in Part B cannot be provided to the extent required, the department may make allowance for submission of such information on a case-by-case basis."

[WAC 173-303-815\(3\)\(a\)](#) allows the department to establish compliance schedules: "The permit may, when appropriate, specify a schedule of compliance leading to compliance with this chapter."

Based on [WAC 173-303-806](#) and [815](#), Ecology established two conditions to ensure the closure cap will have sufficient review both by the agency and the public.

Condition III.11.K.4.a defines requirements for the Landfill Cap. At final closure of the landfill, the Permittees will cover the landfill with a final cover (closure cap) designed and constructed to:

- Provide long-term minimization of migration of liquids through the closed landfill.
- Function with minimum maintenance.
- Promote drainage and minimize erosion or abrasion of the cover.
- Accommodate settling and subsidence so that the cover's integrity is maintained.
- Have a permeability less than or equal to the permeability of any bottom liner system or natural sub soils present.

Condition III.11.K.4.b defines the Compliance Schedule. The proposed conceptualized final cover design is presented in Addendum H (Closure and Financial Assurance). Six months before start of construction of the IDF landfill final cover (but no later than 6 months before acceptance of the last shipment of waste at the IDF), the Permittees will submit the IDF landfill final cover design, specifications and a Construction Quality Assurance Plan (CQA) Plan to Ecology for review and approval. No construction of the final cover may proceed until Ecology approval of the final design is given, through a permit modification.

The Permittees will notify Ecology at least 60 calendar days before it expects to begin closure of the IDF landfill in accordance with [WAC 173-303-610\(3\)\(c\)](#).

## **POST-CLOSURE**

Following certification of closure according to the closure plan in Addendum H, the Permittees will start post-closure care and maintenance. The post-closure care requirements for IDF are based on [WAC 173-303-665\(6\)](#).

## **REQUESTED VARIANCES OR ALTERNATIVES**

There are no requested variances or alternatives for the IDF.

**STATE ENVIRONMENTAL POLICY ACT (SEPA)**

The SEPA determination for the IDF is in the Hanford-Wide Permit Fact Sheet.

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